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10/501,047	03/15/2005	Silvain Buche	JMYT-329US	1649
23122	7590	01/29/2008	EXAMINER	
RATNERPRESTIA			NGUYEN, KHANH TUAN	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/501,047

Applicant(s)

BUCHE ET AL.

Examiner

Khanh T. Nguyen

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-18 are currently pending in the instant application.

#### ***Withdrawn Rejection***

2. The rejection of claim 18 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn in view of Applicant's amendment. The rejection of claims 1-18 under 35 U.S.C. 103(a) as unpatentable over Denton et al. (U.S. Pat. No. 5,716,437) in view of Hunt (U.S. Pat. No. 6,403,245) is withdrawn in view of Applicant's remarks.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the term "metal black" in line 2 which is indefinite because it is unclear what the meaning of "metal black" is. Or, does Applicant mean "carbon black"?

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-4, 7, 9, 10, 14, 15, and 17 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(e) as obvious over Cintra et al. (U.S. Pub. No. 2003/0124422 A1 hereinafter, "Cintra").

With respect to claims 1-3, 9, and 14-15, Cintra teaches a cathode material and a method for preparing a cathode material useful in batteries (i.e. fuel cells) [0028]. Cintra further teaches the cathode material is a slurry mixture of an electrode active material, a

conductive aid, a binder, and a solvent [0029]. The electrode active material may include a noble metal such as platinum [0029]. The said electrode active material is readable on the claimed electrocatalyst particulate as recited in claim 3. The said conductive aid can include a carbon material such as graphite or carbon black to enhance the electrochemical performance [0029 and 0031]. The binder can include polyvinylidene fluoride polymer (PVDF), polytetrafluoroethylene polymer (PTFE), and hexafluoropropylene polymer (HFP) [0029]. The disclosed polymer binder is readable on the claimed proton-conducting polymer. The solvent can include ketone-base solvents such as acetone, MEK, DIBK, NMP, MIBK or a mixture of said solvents [0029]. The disclosed solvent is readable on the claimed liquid medium as recited in claims 14 and 15. Cintra further teaches the cathode slurry mixture having an ink consistency [0029]. In one embodiment, Cintra teaches the cathode ink (i.e. cathode slurry) is prepared by blending about 452 grams (g) of an electrode active material ( $\text{LiCoO}_2$ ) and about 26 grams of a conductive aid (carbon black) [0059]. In other words, the said blend consists of about 5 weight percent of conductive aid (i.e. carbon black or graphite) with respect to the weight of the electrode active material (i.e. electrocatalyst), as recited in claim 2. Cintra further teaches a separate blend consisting of about 21 grams of a conductive polymer binder and about 467 cc of solvent. Then, the two blends are combined to form a homogenous slurry ink composition [0059]. Cintra's cathode ink composition is considered to anticipate the claimed electrocatalyst ink composition and method as recited in claims 1 and 9.

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

In the alternative that the above disclosure is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to produce the claimed composition, as the reference teaches each of the claimed ingredients within the claimed proportions for the same utility (i.e. fuel cells).

Regarding claim 7, Cintra teaches the cathode ink having a solid content of about 51-57 percent by weight [0029]. The word "about" permits some tolerance (see *In re Ayers*, 69 USPQ 109, and *In re Erickson*, 145 USPQ 207), at least about 10% was held to be anticipated by a teaching of a content not to exceed about 896, see *In re Ayers*, 154 F 2d 182, 69 USPQ 109 (CCPA 1946). Thus, the lower limit of about 51 weight percent of solid content of Cintra may be considered to read on the upper limit of 50 weight percent of solid content as recited in instant claim.

Regarding claims 4 and 17, Cintra teaches the electrode active material selected from metal oxides and noble metals [0029]. The unsupported finely divided metal black particle is considered to be a finely divided metal particle that is not dispersed over the surface of a carbon black, thus the disclosure is readable on the instant claims.

Regarding claim 10, Cintra teaches a method including a step of applying the cathode ink to a substrate [0060].

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-18 are rejected under 35 U.S.C. 103(a) as unpatentable over Denton et al. (U.S. Pat. No. 5,716,437 hereinafter, "Denton") in view of Cintra (U.S. Pub. No. 2003/0124422 A1).

Regarding claims 1-6, 9, and 14-18, Denton teaches an ink composition for use in electrode manufacture for fuel cells (Abstract). Denton teaches an ink composition comprising of platinum catalyst supported on high surface area conducting carbon or unsupported and a proton-conducting polymer such as polytetrafluoroethylene polymer (PTFE) (Col. 1, lines 46-58 and Col. 2, lines 24-61).

The difference between the instant application and Denton reference is that Denton failed to teach the particles consisting of graphite which are present at a loading of 1 to 40 weight percent with respect to the weight of the electrocatalyst.

In an analogous art, Cintra teaches a blend of electrode active material such as platinum with conductive aid such as carbon black or graphite in order to enhance



electrochemical performance [0029 and 0031]. In one embodiment, Cintra teaches the carbonaceous material in an amount of about 5 weight percent of the total sum of the electrode active material (453 grams) and conductive aid (26 grams) [0059].

Therefore, it would have been obvious to one of ordinary skill in the art to modify the ink composition of Denton by incorporating a carbonaceous conductive aid in the amount suggested by Cintra in order to provide enhanced electrochemical performance.

Regarding claim 7, Denton further discloses an electrocatalyst ink wherein the solids content of the electrocatalyst ink is between 5 and 50 % weight (Col. 4, lines 52-60).

Regarding claim 8, Denton further teaches an electrocatalyst ink wherein the weight ratio of the electrocatalyst: proton-conducting polymer is between 1:1 and 10:1 (Col. 5, lines 4-7).

Regarding claim 10, Denton further teaches a process for applying the ink composition to a substrate (Col. 2, lines 22-29).

Regarding claim 11, Denton further teaches a gas diffusion electrode comprises of a gas diffusion substrate and an electrocatalytic layer prepared using an electrocatalyst ink according to claim 1 (Col. 2, lines 22-29).

Regarding claim 12, Denton further teaches a catalyst coated membrane comprises of a solid polymer membrane and an electrocatalytic layer prepared using an electrocatalyst ink according to claim 1 (Col. 2, lines 50-53).

Regarding claim 13, Denton further teaches a membrane electrode assembly comprises of an electrocatalytic layer prepared using an electrocatalyst ink according to claim 1 [(Col. 2, lines 40-43) and (Col. 3, lines 22-29)].

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh T. Nguyen whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*hu*

KTN  
01/23/2008

*Lorna M. Douyon*  
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PRIMARY EXAMINER